REMARKS

Claims 1 to 20 are pending in this application. Claims 1 and 3 have been objected to for containing informalities. Claims 1 and 2 have been rejected under 35 U.S.C. § 103(a) over US Patent No. 5,956,600 to Kuroi et al., in view of Wolf et al., *Silicon Processing for the VLSI Era*, vol. 1, Lattice Press (1986). Claim 3 has been rejected under § 103(a) over US Patent No. 5,738,757 to Burns et al., in view of Wolf. Claim 4 has been rejected under § 103(a) over Burns, in view of Wolf, in further view of Streetman, *Solid State Electronic Devices*, Prentice Hall (1990).

By this Amendment, applicant has amended claims 1 and 3. The claim amendments are of formal nature and do not narrow the scope of any of the claims or any claim element contained therein. New claims 5 to 20 have been added depending respectively from independent claims 1 and 3. Applicant respectfully traverses the above rejections and requests reconsideration of the subject application in view of the following remarks.

In Paragraph 1 of the Office Action, claims 1 and 3 have been objected to for informalities. Applicant thanks the Examiner for his suggestion of change, which has been incorporated in the above claim amendments. Accordingly, the subject objection has been overcome.

In Paragraph 3 of the Office Action, claims 1 and 2 have been rejected under § 103(a) over Kuroi in view of Wolf. This rejection is respectfully traversed.

Independent claim 1 requires at least "selectively and anisotropically etching said silicon substrate with alkali etchant."

The Office Action acknowledged that "Kuroi does not expressly disclose use of an alkali etchant" but cited Wolf for its teaching that orientation-dependent etchants include alkali etchants. Applicant respectfully disagrees.

Kuroi teaches forming an isolation region having a groove 12 tapered at an angle of about 30° with a perpendicular line. Wolf, on the other hand, teaches forming groove having edges of (111)-planes at an angle of 54.7° from the (100)-planes, *i.e.*, 35.3° from a perpendicular plane.

There is no teaching or suggestion that Kuroi and Wolf be combined to arrive at the claimed invention. While the Office Action cites to Wolf for reasons to combine Wolf with Kuroi, applicant wishes to point out that Wolf also teaches that "[w]et etching processes are generally isotropic." (Page 529) Therefore, when taken as a whole, Wolf provides neither teaching nor suggestion that it be combined with Kuroi.

In fact, one skilled in the art will not be motivated to combine Wolf with Kuroi as suggested by the Office Action. Kuroi describes long bird's beak as a problem of LOCOS isolation regions (see, col. 5, ll. 2-12), because it narrows the effective active area. As one skilled in the art will appreciate, isolation regions, such as those in Kuroi, are located where active elements are not formed. If Wolf is to be combined with Kuroi, the angle of groove edges in Kuroi will change from about 30° to about 35°. As a result, the area occupied by groove edges will increase, which in turn decreases the active area. Moreover, (111)-planes have predetermined directions (*i.e.*, four (110) directions on (100)-plane). If the isolation grooves are formed by wet etching which forms (111) side surfaces, the isolation regions will be limited.

In view of the above one skilled in the art will not be motivated to apply the teaching of Wolf to Kuroi as suggested by the Office Action in order to arrived at the claimed invention. Therefore, independent claim 1 and dependent claim 2 are not be obvious but allowable over Kuroi and Wolf. Accordingly, the subjection rejection has been overcome.

In Paragraph 7 of the Office Action, claim 3 has been rejected under § 103(a) over Burns, in view of Wolf. This rejection is respectfully traversed.

Similar to claim 1, independent claim 3 requires that "selectively and anisotropically etching said silicon substrate with alkali etchant." Therefore, independent claim 3 is allowable over the cited prior art for at least the same reasons that claim 1 is allowable.

Moreover, independent claim 3 requires "forming at least one film stress relaxing groove partially in said silicon nitride film" and "said film stress relaxing groove relaxing film stress applied to said mask opening."

The Office Action acknowledged that "Burns does not expressly disclose that the groove is a stress relaxing groove, said film stress relaxing groove relaxing film stress applied to said mask opening" but states that the structure in Fig. 2D "would inherently function as a stress relaxing groove." Applicant respectfully disagrees.

The cited portions of Burns merely disclose that the silicon nitride layer 14 is patterned to form a first mask (col. 6, ll. 59-61; Figs. 2B to 2D), which is used in a second and final etching of silicon wafer 10 (col. 7, ll. 2-3; Fig. 2f). In other words, the removed portion on the right side of silicon nitride film (as referred to in the Office Action) is a part of the mask formed to be used in a later etching process. Therefore, Burns does not teach a "film stress relaxing groove" in addition to the mask opening as is required in independent claim 3.

Accordingly, even if Burns and Wolf are combined as suggested in the Office Action (which applicant strongly contests), the combination does not teach "said film stress relaxing groove relaxing film stress applied to said mask opening" as required independent claim 3. In Burns, the removed portion of the silicon nitride film is in and of itself the mask opening. As a result, the removed portion in Burns cannot relax film stress applied to itself. Therefore, the combination Burns and Wolf does not disclose the above claim feature as required in independent claim 3.

In view of the forgoing, independent claim 3 is not be obvious but allowable over Burns and Wolf. The subjection rejection has thus been overcome.

In Paragraph 11 of the Office Action, claim 4 has been rejected under §103(a) over Burns, in view of Wolf, in further view of Streetman. This rejection is respectfully traversed. Claim 4 depends from independent claim 3 and therefore is allowable for at least the same reasons that claim 3 is allowable. Accordingly, the subject rejection has been overcome.

New claims 5 to 20 depend respectively from claims 1 and 3 and recite additional features that distinguish over the cited prior art. Therefore, new claims 5 to 20 are believed to be allowable.

Applicant has shown that claims 1 to 4 are patentable over the cited art and hereby respectfully requests that the objection and rejections of the claims 1 to 4 be withdrawn. Each of the pending claims 1 to 20 in this application is believed to be in immediate condition for allowance and such action is earnestly solicited.

Respectfully submitted,

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